

# PATENT ABSTRACTS OF JAPAN

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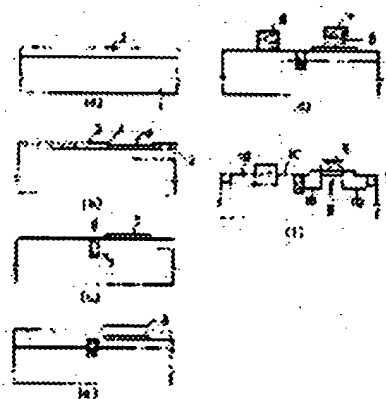
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## (54) SEMICONDUCTOR DEVICE AND MANUFACTURE THEREOF

### (57)Abstract:

**PURPOSE:** To make it possible to form MESFETs whose threshold voltages are different from each other, on the same substrate by a method wherein step differences are provided on the surface of a semiconductor film by further laminating it with a part of a layer to become a channel active layer by a crystal growth technique which performs control at the level of an atomic layer on an epitaxial active layer which is controlled and deposited at the level of an atomic layer.

**CONSTITUTION:** An N-type GaAs epitaxial layer 2 is formed on a semi-insulative GaAs substrate 1 by a technique of superposing atomic planes one sheet by one sheet and a prescribed part only of an epitaxial layer 5 of the level of an atomic layer is further deposited on the layer 2 using this crystal growth technique. Then, a high-melting point metal film or a high-melting point metal compound film 8 is formed as a gate electrode, an insulating film 9 is deposited thereon to perform a gate electrode processing and the electrode 8 is self-aligned to form source/drain N<sup>+</sup> layers 10 by implanting Si ions. Thereby, MESFETs(Metal Semiconductor Field Effect Transistors), whose threshold voltages are different from each other, can be manufactured on the same substrate.



## LEGAL STATUS

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